

Appl. No. 10/562,909
Amdt. dated July 23, 2009
Reply to Office action of Feb. 23, 2009

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claims 1-26. (Cancelled)

27. (Currently amended) A method for manufacturing a throttle valve unit having a housing part and a valve flap part that is able to move in relation to the housing part, the method comprising following process steps:

- a) injection molding the housing part of the throttle valve unit out of a first plastic material in a first cavity,
- b) transferring the molded housing part obtained according to process step a) to a second cavity spatially separate from the first cavity,
- c) injection molding the movable valve flap part of the throttle valve unit out of a second plastic material inside the molded housing part in the second cavity,
and
- d) inserting bushes into openings of the molded housing part and/or applying an additional material after process step a) onto molding surfaces of the second plastic material of the valve flap part to be subsequently injection molded in the molded housing part.

28. (Currently amended) A method for manufacturing a throttle valve unit having a housing part and a valve flap part that is able to move in relation to the housing part, the method comprising the following process steps:

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- a) injection molding the housing part of the throttle valve unit out of a first plastic material in a first cavity,
- b) transfer of the molded housing part obtained according to process step a) to a second cavity spatially separate from the first cavity,
- c) injection molding the movable valve flap part of the throttle valve unit out of a second plastic material inside the molded housing part in the second cavity, the valve flap part having shaft parts, and
- d) demolding the molded housing part at very high temperatures and maintenance of this temperature to reduce stresses and permit secondary crystallization processes to occur
- d) inserting bushes into openings of the molded housing part with rotational fixing in relation to the shaft parts of the valve flap part before or during the transfer of the molded housing part to the second cavity and/or applying an additional material into a gap between the molded housing part and the valve flap part.

29. (Currently amended) A method for manufacturing a throttle valve unit having a housing part and a valve flap part that is able to move in relation to the housing part, the method comprising including the following process steps:

- a) injection molding the housing part of the throttle valve unit out of a first plastic material in a first cavity,
- b) transferring the molded housing part obtained according to process step a) to a second cavity spatially separate from the first cavity,
- c) injection molding the movable valve flap part of the throttle valve unit out of a second plastic material inside the molded housing part in the second cavity, the first and second plastic materials being injected into the first and second cavities, respectively, through injection points positioned in the cavities in such a way that the flow orientation of chain molecules of the plastic materials and their reinforcing and filler materials are used to influence the shrinkage behavior of

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the housing part and the valve flap part during the cooling phase so that the second plastic material of the valve flap part shrinks away from the housing part in the intended manner in order to provide the desired gap between the housing part and flap part, and

-d) ~~demolding of the molded housing part from the first cavity and execution of an intermediate treatment of the resulting premolded part to selectively reduce stresses in the premolded part~~

d) inserting bushes into openings of the molded housing part or applying a third material into the gap.

Claims 30 and 31. (Canceled)

32. (Previously presented) The method according to claim 27, wherein a partially crystalline thermoplastic with a high melting temperature is used as the first plastic material.

33. (Previously presented) The method according to claim 28, wherein a partially crystalline thermoplastic with a high melting temperature is used as the first plastic material.

Claim 34. (Canceled)

35. (Currently amended) The method according to claim 27, wherein an amorphous high-temperature thermoplastic with a very high glass temperature 30 degrees K above a continuous use temperature of the throttle valve unit is used as the first plastic material.

36. (Currently amended) The method according to claim 28, wherein an amorphous high-temperature thermoplastic with a very high glass temperature 30 degrees K above a continuous use temperature of the throttle valve unit is used as the first plastic material.

Claim 37. (Canceled)

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38. **(Previously presented)** The method according to claim 27, wherein the second plastic material of the valve flap part is a partially crystalline thermoplastic with a melting temperature lower than that of the plastic material used for the injection molding of the molded housing part.

39. **(Previously presented)** The method according to claim 28, wherein the second plastic material of the valve flap part is a partially crystalline thermoplastic with a melting temperature lower than that of the plastic material used for the injection molding of the molded housing part.

Claim 40. **(Canceled)**

41. **(Previously presented)** The method according to claim 27, wherein the second plastic material of the valve flap part is an amorphous high-temperature thermoplastic with a melting temperature lower than that of the plastic material used for the injection molding of the molded housing part.

42. **(Previously presented)** The method according to claim 28, wherein the second plastic material of the valve flap part is an amorphous high-temperature thermoplastic with a melting temperature lower than that of the plastic material used for the injection molding of the molded housing part.

Claim 43. **(Canceled)**

44. **(Previously presented)** The method according to claim 27, wherein the second plastic material of the valve flap part is a partially crystalline thermoplastic with a melting temperature higher than that of the plastic material used for the injection molding of the molded housing part.

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Claims 45 and 46. (Canceled)

47. (Previously presented) The method according to claim 27, wherein the second plastic material of the valve flap part is an amorphous high-temperature thermoplastic with a melting temperature higher than that of the plastic material used for the injection molding of the molded housing part.

Claims 48 and 49. (Canceled)

50. (Currently amended) A method for manufacturing a throttle valve unit having a housing part and a valve flap part that is able to move in relation to the housing part, the method comprising the following process steps:

- a) injection molding the housing part of the throttle valve unit out of a first plastic material in a first cavity,
- b) transfer of the molded housing part of the housing part obtained according to process step a) to a second cavity spatially separate from the first cavity,
- c) injection molding the movable valve flap part out of the throttle valve unit of a second plastic material inside the molded housing part in the second cavity, and
- d) demolding the valve flap part obtained according to process step c) inside the premolded part in a position of the valve flap part inside the molded housing part that produces an extremely narrow gap geometry or in a sealed position of the valve flap part inside a gas passage of the molded housing part, which position is defined during the injection of the second plastic material for the valve flap part, and
- e) applying a third material into the gap.

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51. **(Previously presented)** The method according to claim 50, wherein the valve flap part is injection molded inside the molded housing part, in a position that permits it to pass through the gas passage of the molded housing part.

52. **(Previously presented)** The method according to claim 50, wherein the valve flap part is injection molded out of the second plastic material in an inclined position that prevents the valve flap part from passing through the cross section of the gas passage of the molded housing part.

Claims 53 and 54. **(Cancelled)**

55. **(Currently amended)** The method according to claim 50, further comprising forming gaps between the valve flap part and a gas passage of the molded housing part and at the bearing points of the valve flap part, the gaps being selectively adjusted according to process step d), demolding the valve flap part obtained according to process step c) inside the premolded part in a position of the valve flap part inside the molded housing part that produces an extremely narrow gap geometry or in a sealed position of the valve flap part inside a gas passage of the molded housing part, which position is defined during the injection of the second plastic material for the valve flap part.

Claims 56 and 57. **(Cancelled)**

58. **(Currently amended)** The method according to claim 57 27, wherein the third additional material is rubbed into the molding surfaces of the molded housing part in the form of a lubricant.

59. **(Currently amended)** The method according to claim 57 27, wherein the third additional is applied in sheet form as a spacer layer to the molding surfaces of the molded housing part.

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60. **(Currently amended)** The method according to claim 57 27, further comprising using a thermal treatment to partially or completely remove the third additional material from a two-component throttle valve unit thus obtained.

Claims 61 and 62. **(Canceled)**

63. **(Currently amended)** A method for manufacturing a throttle valve unit having a housing part and a valve flap part that is able to move in relation to the housing part, the method comprising including the following process steps:

- a) injection molding the housing part of the throttle valve unit out of a first plastic material in a first cavity,
- b) transferring of the molded housing part obtained according to process step a) to a second cavity spatially separate from the first cavity,
- c) injection molding the movable valve flap part of the throttle valve unit out of a second plastic material inside the molded housing part in the second cavity, and
- d) inserting bushes into openings of the molded housing part so that the bushes are rotationally fixed in relation to the molded housing part, before or during the transfer of the molded housing part to the second cavity.

Claim 64. **(Canceled)**

65. **(Previously presented)** The method according to claim 63, wherein the bushes are made of a metallic or nonmetallic material with a low coefficient of friction in comparison to the first plastic material or the second plastic material.

66. **(Currently amended)** The method according to claim 64 28, wherein the bushes are made of a metallic or nonmetallic material with a low coefficient of friction in comparison to the first plastic material or the second plastic material.

Claim 67. (Cancelled)

68. (Currently amended) A method for manufacturing a throttle valve unit having a housing part and a valve flap part that is able to move in relation to the housing part, the method comprising following process steps:

- a) injection molding the housing part of the throttle valve unit out of a first plastic material in a first cavity,
- b) transferring the molded housing part obtained according to process step a) to a second cavity spatially separate from the first cavity,
- c) injection molding the movable valve flap part of the throttle valve unit out of a second plastic material inside the molded housing part in the second cavity, and
- d) introducing a third material into the gap geometries of the two-component injection molded throttle valve unit where the gap geometries lie outside the tightness specification before the introduction of the third material and then - after the possibly partial removal of the third material - lie within the tightness specification.

69. (Currently amended) A method for manufacturing a throttle valve unit having a housing part and a valve flap part that is able to move in relation to the housing part, the method comprising following process steps:

- a) injection molding the housing part of the throttle valve unit out of a first plastic material in a first cavity,
- b) transferring the molded housing part obtained according to process step a) to a second cavity spatially separate from the first cavity,
- c) injection molding the movable valve flap part of the throttle valve unit out of a second plastic material inside the mold housing part in the second cavity,
- d) providing bushes between the molded housing part and the flap part, and

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- e) introducing a fourth material into the gap geometries of the two-component injection throttle valve unit with bushes where the gap geometries lie outside the tightness specification before the introduction of the fourth material and then - after the possibly partial removal of the fourth material - lie within the tightness specification.